n 8

SBA

Business Basics

Inventory Management Manufacturing/ Service

A Self-Instructional Booklet
1016

NEWARK PUBLIC LIBRARY

OCT 14 1980

U. S. GOVT. PUBS.
DEPOSITORY 376

U.S. Small Business Administration
Office of Management Assistance

SBA 1.19:

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

KEEP THIS GUIDE SHEET -- FOR INSTRUCTOR'S USE ONLY

INVENTORY MANAGEMENT -- Manufacturing/Service
Instructor's Guide Sheet

Booklet Description
This Booklet

1. Types of Inventories
2. Purpose of Inventory Management
3. Developing Control Systems for Decision Making
4. Recordkeeping
5. Excess Inventory Investment Problems
6. Identifying Overstock or Short Supply
7. Suitable Inventory Levels
8. Forecasting Inventory Levels by Expected Demand and Production
9. Systematic Scheduling to Replenish Inventory

Supplemental Instruction
With the Client:

1. Determine inventory level measured in days' supply and compare with industry average to identify possible problems.

2. Evaluate work-in-process inventory to determine if this investment may be tying up capital that is sorely needed elsewhere.

3. Establish inventory guidelines through analysis of basic stock, safety stock, and lead time. Even if the use of a precise formula may not be entirely applicable due to industry practices, alert client to the factors that must be considered in determing a desirable inventory level.

4. Determine a suitable ordering interval based upon considerations of convenience, shipping time, and discount availability.

5. Prepare a sample set of inventory records. Post inventory records for a period of one to two months and analyze them to determine items apparently in short supply and those where an excess exists.

6. Have the client take a physical inventory and compare the results with the book inventory so any losses due to pilferage, inaccurate recording of sales or receipts, and the like can be identified.

7. Insure that the client understands all the possibilities of an apparent inventory shortage when reconciling physical and book inventory. People are often particularly sensitive to problems related to stealing, but seldom as sensitive to as important a problem as failure to checi shipments from vendors to verigy packing lists and invoice quantities.

8. Establish goals for months' supply and average turnover rate to evaluate the success of inventory management on a continuing basis.

NOTE: Prior to taking this booklet, the participant should have completed the introductory booklet in this series, Asset Management.

blank page

INTRODUCTION

The primary concern of inventory management is to maintain raw material and finished goods inventories at levels that are not too low as to result in lost sales or costly production delays or too high as to tie up capital and space. Such a tie-up of capital can lead to excessive borrowing, unnecessary interest expense, and inability to purchase other more necessary items.

Controlling Inventory Levels

You can control the inventory levels in your business and provide a suitable supply for sales and production needs while minimizing the risk of excessive investment by:

- Maintaining clear, correct, and current records.
- Replenishing inventory through purchases or production in controlled quantities that will maintain suitable inventory levels with adequate safety stocks without permitting excesses to develop.
- Reducing excessive inventories so that the dollars realized from clearing overstocks can be put to use elsewhere.

Need for Prompt Action

Inventory problems require prompt corrective action. In many businesses, the market life of inventory is short and if inventory is insufficient when market demand peaks, sales and profits are lost. If inventory is excessive when demand declines, the excess must be cleared, often at sharply reduced prices, again affecting profits.

Inventory

In a manufacturing or service business, the concept and valuation of inventory is a little more complex than in a merchandising business. But, the basic definition and valuation remain the same. Inventory consists of goods or services acquired for resale to customers. The value of the inventory is the cost of acquiring those goods and services. But inventories in manufacturing and service businesses can take three different forms as follows:

- Finished Goods. Completed products or services that are available for immediate sale to customers. The value of finished goods inventory includes the cost of purchased materials, production labor, and overhead related to production.

- Work-in-Process. Products or services on which production is underway but is not yet complete. The value of work-in-process inventory includes the cost of purchased materials, production labor, and production-related overhead required to bring them to their actual steps of completion when the inventory is evaluated.

- Raw Materials. Any materials purchased for use in production. The value of raw materials inventory is the cost of acquiring it.

Not all businesses will require all three inventory types, but most businesses must have one or more.

Work-in-Process: The Neglected Inventory

Too often, businesses neglect the importance of their work-in-process inventory. The cost of materials, the cost of labor, and the cost of overhead. All of these are dollars invested in inventory until the job is complete and billed to the customer.

Dollars invested in work-in-process can be even more critical than dollars invested in raw materials or finished goods. As with any inventory, they tie up capital that might be better used elsewhere. In addition, there is a unique risk with work-in-process inventory. The dollars invested usually cannot be recovered until the product or service is complete. Raw materials that are no longer needed can often be returned to the supplier or sold at wholesale prices. Excesses of finished goods can be discounted and sold. But work-in-process has virtually no market value. In most cases, excessive work-in-process inventory can only be reduced through completion and sale.

Inventory Management

Inventory management can be defined briefly as follows:

- Acquiring an adequate supply and variety of inventory to meet production and sales needs.

- Providing safety stocks to meet unexpected demand or delays in inventory replenishment.

- Investing in inventory wisely so that excessive capital is not tied up, excessive space is not required, or unnecessary borrowing and interest expense is not required.

. Maintaining accurate and up-to-date records to help identify and prevent shortages and to serve as a data base for decisions.

Booklet Objectives

In this booklet you will learn the following:

. How to maintain simple inventory records that will keep you informed of the inventory status of all goods in stock at all times.

. How to determine whether or not your total investment in inventory is excessive or insufficient.

. How to identify particular items in your inventory that might be overstocked or in short supply.

. How to establish guidelines for determining suitable inventory levels.

. How to forecast inventory requirements based upon sales or production expectations and desirable inventory levels.

. How to use these guidelines with your inventory records in order to plan purchases and production for inventory replenishment.

. How to time your placement of orders with suppliers so that raw materials inventory can be sustained at levels that will minimize the chances of production delays without an excessive commitment of capital.

Review

Before continuing with the rest of this booklet, let us review some of the material that you have seen in this introduction.

NOTE: Cover the correct answers and write your answers on a separate piece of paper (or in the book). Check your answers and review weak areas. Do all the exercises the same way.

1. What are the major problems associated with inadequate inventory?

   1.
   2.

Lost sales.
Production delays.

---

2. List three problems associated with excessive inventories that are applicable to any business:

   1.
   2.
   3.

Ties up capital, threatening cash position.
Ties up space.
Interest (carrying) costs.
Opportunity loss.
(ANY THREE ARE CORRECT)

---

3. Materials required for use in a production process are called _____ inventory.

---

raw materials

---

4. Goods or services in production that require additional processing before they are ready for sale are called _____ inventory.

---

work-in-process

---

5. Goods or services ready for sale to customers are called _____ inventory.

---

finished goods

---

6. Identify the three types of inventory that might be found in any manufacturing or service business:

   1.
   2.
   3.

Raw Materials
Work-in-Process
Finished Goods

---

7. All manufacturing and service businesses have all three inventory types. (TRUE/FALSE)

FALSE

---

8. Which of the three inventory types is found in virtually all manufacturing and service businesses?

   a. raw materials
   b. work-in-process
   c. finished goods

---

b. work-in-process

---

9. Name a special problem that affects the market life of such inventories as sporting goods, greeting cards, and apparel.

---

seasonal factors

READEX FICHE

10. Name a special problem that affects the market life of such inventories as books, records, and toys.

---

relatively short demand period

---

11. Name a special problem that affects the market life of inventories in businesses such as food processing.

---

spoilage

---

* * * * *

Inventory Investment Control

Inventory investment control is accomplished by:

. Establishing comprehensive inventory policies and guidelines.

. Identifying and eliminating overstocks promptly.

. Replenishing inventory in anticipation of customer demand and production requirements.

Elimination of Overstocks

A policy of systematic review of your entire inventory -- raw materials, work-in-process, and finished goods -- can reduce many excesses soon after they occur. In this way, problems are corrected before they become too serious and inventory can be cleared at reasonably favorable prices. Additionally, you avoid the compounding effect that occurs with the passage of time as increasing numbers of inventory items develop overstocks due to declining market demand.

Inventory Replenishment

Elimination of overstocks is a corrective action that will reduce the negative effects of inventory management problems after they occur. Systematic procedures for inventory replenishment, whether purchasing raw materials from a supplier or scheduling production for finished goods inventory, will minimize the possibility of problems developing.

Besides reducing the possibility of overstocks, production and purchase planning will help you avoid shortages that can only be filled through forfeiture of discounts, premium shipping charges, or costly overtime production.

Determining your inventory replenishment requirements involves answering two questions:

. What to buy? (Or, What to produce?)

. How much to buy? (Or, How much to produce?)

Both questions can be answered by establishing an inventory target for any item you carry expressed as so many days', weeks', or months' supply. For example, if a sausage processor planned to carry a two days' supply of sausages, and average daily sales were 500 pounds of sausages, then

325-851 O - 80 - 2

a desirable inventory level of finished sausages could be calculated as follows:

Inventory Level = Days' Supply x Average Daily Sales

Inventory Level = 2 x 500

Inventory Level = 1,000 pounds

Sales Forecasting

The first step in estimating expected sales in coming months is to calculate, from inventory records, actual sales during an appropriate review period. For example, if you want to determine an appropriate inventory level for Christmas decorations on October 1, it will be of little value to consider sales in July, August, or September. Average monthly sales for the entire year will tell you little or nothing either. A more suitable review period would be the months of October, November, and December of the previous year.

If your sales showed a year-to-year growth rate, you should adjust review period sales for the average sales growth that your business has experienced in the previous year.

Consider the following example. A manufacturer of plastic sleds desires to maintain a two months' supply in inventory. On October 1, the manufacturer is determining a suitable inventory level so that inventory can be built to a two-month level. Sales of sleds have grown 20% from year to year. Sales in October and November of the previous year are as follows:

October	1,000
November	2,000
Total	3,000

Adding 20% to this amount to reflect sales growth, expected sales in October and November would be calculated as follows:

Sales Growth (units) = Growth Rate x Review Period Sales

Sales Growth (units) = .20 x 3,000

Sales Growth (units) = 600

Expected Sales = Sales Growth (units) + Review Period Sales

Expected Sales = 600 + 3,000

Expected Sales = 3,600

Therefore, the manufacturer should try to have 3,600 sleds in inventory on October 1. In this way, there should be a sufficient supply on hand to fill orders from retailers in October and November.

Demand

Another factor that should be considered in demand forecasting is whether or not sales during the review period were affected by stockouts that prevented customer requests from being fulfilled. Forecasting requires measurement of customer demand for a particular item, the number of pieces that customers wished to purchase, not just those orders that you were able to sell. If information on unfulfilled customer requests is available, such requests should be added to actual sales for the review period in order to reach a more realistic demand forecast.

* * * * *

1. Determining raw materials purchase requirements includes answering two questions. What are they?

   1.
   2.

   What to buy?
   How much to buy?

---

2. In order to determine a desirable finished goods inventory level for any item, you would:

   a. multiply the months' supply by expected average monthly sales

   b. divide the months' supply by expected average monthly sales

   c. divide expected average monthly sales by the months' supply

---

   a. multiply the months' supply by expected average monthly sales

---

3. You wish to maintain a two months' supply of women's tops in inventory. Your expected average monthly sales are 75 tops. Therefore, you would maintain an inventory of _____ tops.

---

150 (75 x 2)

---

4. Your forecast of expected sales in coming months will often depend upon your actual sales in some appropriate _____.

---

review period

---

5. If sales of an item are relatively level from month to month, you can normally forecast requirements based upon sales:

   a. in recent months
   b. in the previous year

---

a. in recent months

---

6. If sales show a seasonal pattern, you should examine sales in the _____.

---

previous year

---

7. Assume that you normally stock inventory to meet expected sales for the coming two-month period. On May 1, you are determining production requirements for picnic coolers. Sales in March and April were 200 and 500 coolers respectively. In the previous year, you sold 700 coolers in May and 1,000 in June. Sales during the review period were, therefore, _____ coolers.

1,700 (700 + 1,000)

---

8. If your sales of all products had grown by 10% since the previous year, you might then adjust the desired inventory level to _____ picnic coolers.

1,870 (.10 x 1,700 = 170; 170 + 1,700 = 1,870)

---

9. If you had 500 coolers on hand May 1, you would need _____ additional coolers to reach your desired inventory level.

1,370 (1,870 - 500)

---

10. When reviewing historic sales records to forecast inventory requirements, you should also try to consider _____ to estimate probable demand more accurately.

---

unfulfilled customer requests

---

* * * * *

Establishing Inventory Guidelines

In our earlier example of a sled inventory, it was assumed that the manufacturer desired to maintain a two months' supply of finished goods. But how is such a figure derived? Why not one month, or three months, or even six months?

In some cases, product shelf life may be the determining factor. If a bakery stocked more than a one-day supply of finished goods, they would lose their freshness and the bakery would lose customers. Production time is short. Eggs, flour, butter, sugar, and flavoring are converted to cakes in an hour or two.

More often, there are many other factors to consider. Take the case of the manufacturer who may require several weeks to receive delivery of raw materials from suppliers. On an emergency basis, the manufacturer may be able to replenish inventory more promptly, but only by forfeiting quantity discounts or incurring extra delivery charges. Usually it would be better to accept normal delivery, taking full advantage of all available discounts and minimizing freight costs.

Many products require relatively long periods in production. Lumber used in furniture and cabinet manufacturing must be thoroughly dried. During this period, unexpected sales demand could deplete finished goods inventories, causing lost sales, customer dissatisfaction, and lost profits.

Lead Time

For raw materials inventories, the length of time between order placement and receipt of goods is called lead time. For finished goods inventories, lead time is the time required for production, assuming that required raw materials are already in inventory. If raw materials are not ordered until the production decision is made, then the delivery time for raw materials must be added to the production time to determine lead time.

If the production lead time for an item is one week, would it be sufficient to establish a minimum inventory level of a one-week supply? Probably not. If new production did not begin until the supply of a certain item reached the one-week level, there would probably be just enough stock on hand to cover expected sales until production was complete. However, if anything went wrong (and it usually does), there would be a stockout before production was complete.

An unexpectedly large request from a customer might not be filled because of insufficient inventory. A strike, conflicting production requirements, manufacturing problems, or unforeseen weather conditions could seriously delay the completion of production so that the stockout could last for an extended period.

Safety Stocks

To guard against unexpected delays, most businesses maintain a safety, or cushion stock as protection against such occurrences.

The size of the safety stock will depend upon the number and extent of the factors that could interrupt deliveries.

Suitable guidelines would have to be based upon your own experience in the industry.

Basic Stock

Additionally, many businesses require a basic stock. For finished goods inventory, an amount sufficient to accommodate regular sales, offering customers a reasonable selection of finished goods. For raw materials, the basic stock that would normally be in production at any given time.

Desired Inventory Level

Assume that the lead time for a particular item is two weeks. The safety stock that the business wishes to maintain is a four-weeks' supply. Additionally, a one-week basic stock is required. The desired inventory level is the sum of these factors:

Lead time	2 weeks
+ Safety stock	4 weeks
+ Basic stock	1 week
= Inventory level	7 weeks

Summary

The table below summarizes the components of the desired inventory level.

	RAW MATERIALS INVENTORY	FINISHED GOODS INVENTORY
Lead Time	Delivery time from supplier.	Production time, if raw materials are normally in inventory; add delivery time if raw materials must be purchased.
Safety Stock	Cushion against supply delays such as shipping problems or strikes.	Cushion against production delays such as conflicting requirements or equipment problems.
Basic Stock	Amount of raw materials normally committed to work-in-process.	Inventory required to provide customers with reasonable selection.
Desired Inventory Level	Sum of above.	Sum of above.

* * * * *

1. For raw materials inventory, the time required to place an order and receive delivery is called the _____ time.

---

lead

---

2. For finished goods inventory, lead time is usually (PRODUCTION/DELIVERY) time.

PRODUCTION

---

3. When must raw materials delivery time be added to production time to determine the lead time for finished goods inventory?

When the raw materials needed for production are not immediately available in inventory.

---

4. Raw material stocked as protection against delivery delays, unexpectedly large production requirements, strikes, etc., is called the _____ stock.

---

safety (cushion, buffer)

---

5. In finished goods inventory, the minimum quantity needed to provide customers with a reasonable selection is called the _____ stock.

---

basic

---

6. How would you describe the basic stock for raw materials inventory?

The amount in production (work-in-process) at any given time.

---

7. The production time for a particular item in finished goods inventory is one week. The safety stock is a two-week supply and the basic stock requirement is two weeks. The inventory level should be a _____ weeks' supply.

---

5 (1 + 2 + 2)

---

8. To convert the inventory expressed in weeks' supply to an inventory in units, you would:

   a. divide weekly sales by the weeks' supply
   b. multiply weekly sales by the weeks' supply

---

b. multiply weekly sales by the weeks' supply

---

9. If average weekly sales of the item are 20 pieces, the desirable finished goods inventory level would be _____ pieces.

---

100 (20 x 5)

---

10. Raw materials inventories are replenished through (PURCHASES/PRODUCTION).

325-851 O - 80 - 3

PURCHASES

---

11. Finished goods inventories are replenished through _____.

---

production

---

* * * * *

What to Buy (or Produce)?

The desired inventory level should be considered an order point. Whenever the stock of an item falls to this point or below, the item should be purchased or produced.

For example, if a women's clothing manufacturer wished to maintain a six weeks' supply of fabric in inventory, and average usage of a particular fabric was 50 yards per week, the order point would be 300 (50 x 6) yards. When inventory dropped below 300 yards, more fabric should be ordered.

How Much to Buy (or Produce)?

The quantity of fabric to purchase would depend upon the usual time between orders, called the ordering interval. In this way, a sufficient supply would be maintained so that inventory would average out to the desired level between orders.

A stock equal to expected usage during the order interval should be added to the order point in order to determine an order ceiling. If the order interval is two weeks, then usage during the order interval would be 100 (50 x 2) yards.

Order Ceiling = Order Point + Order Interval Usage

Order Ceiling = 300 + 100

Order Ceiling = 400 yards

If, when preparing an order, the manufacturer has 250 yards on hand, the order quantity would be determined as follows:

Order Quantity = Order Ceiling - Stock on Hand

Order Quantity = 400 - 250

Order Quantity = 150 yards

If an order for 50 yards had already been placed, but not yet received, the present order should be reduced by the 50 yards on order. The new order would then be 100 (150 - 50) yards.

Review

Let us review the steps involved in determining order quantities using finished goods inventory for a canoe manufacturer as an example. The manufacturer desires to maintain a basic stock equal to six weeks' sales and a safety stock of three weeks' sales. Production lead time is three weeks. The production facility is usually completely occupied with a single canoe model at any time. The interval between production periods for any model is usually six weeks. Average weekly sales of the model are 10 canoes.

The remaining steps involved in determining the required quantity are essentially the same as those involved in determining an order quantity for raw materials purchases. The only exception is that the terms production quantity, production point, production ceiling, and production interval will be substituted for order quantity, order point, order ceiling, and order interval.

A desirable inventory level, or production point, is then calculated as follows:

Lead Time	3 weeks	
+ Basic Stock	6 weeks	
+ Safety Stock	3 weeks	
= Production Point	12 weeks	or 120 (12 x 10) canoes

Whenever the supply of any canoe model drops to a 12 weeks' supply or below, additional production should be planned. To determine a production quantity, you must first calculate a production ceiling:

Production Point	12 weeks	
+ Production Interval	6 weeks	
= Production Ceiling	18 weeks	or 180 (18 x 10) canoes

Assume that a production quantity is being prepared for a canoe model with average weekly sales of 10. Stock on hand is 80 canoes. This is below the production point of 120 (12 x 10) canoes.

The production quantity would be calculated as follows:

Production Ceiling	180
- Stock on Hand	80
= Production Quantity	100

The manufacturer should produce 100 canoes. If any are already in production, the quantity in production should be subtracted.

Reviewing Production Requirements

Production requirements should always be reviewed to see if productive capacity is sufficient to meet the requirement in the time allotted. If not, the production interval used in determining the order quantity may have to be extended; or, if this would create a serious conflict with expected requirements for other products, overtime should be scheduled; or the original estimates of safety stocks and basic stocks should be reexamined to locate and eliminate any apparent excesses.

* * * * *

1. The desired inventory level equals the order (POINT/CEILING).

POINT

---

2. Raw materials inventory should be ordered whenever the supply on hand falls below the _____.

---

order point

---

3. The time between orders is called the _____.

---

order interval

---

4. The order ceiling equals the order point plus the _____.

---

order interval

---

5. To determine an order quantity, you subtract the quantity on hand from the _____.

---

order ceiling

---

6. The terms order ceiling, order interval, etc., are used in determining purchase requirements for raw materials inventory. The corresponding terms used in determining production requirements for manufacturing finished goods inventory are _____ ceiling, _____ interval, etc.

---

production
production

---

7. The desired inventory level for raw materials inventory is a 10 weeks' supply. Therefore, a 10 weeks' supply would be the order _____.

---

point

---

8. If the average production requirement is 20 units per week, the order point would be _____ units.

---

200 (20 x 10)

---

9. If the supply of a raw material falls to 15 units, it (SHOULD/SHOULD NOT) be ordered.

SHOULD (less than the order point)

---

10. If the order interval is 2 weeks and the order point is a 10 weeks' supply, the order ceiling is a _____ weeks' supply.

---

12 (10 + 2)

---

11. If the order ceiling is a 12 weeks' supply and average weekly production usage is 20 units, the order ceiling is _____ units.

---

240 (12 x 20)

---

12. If the stock on hand is 150 units and the order ceiling is 240 units, the order quantity is _____ units.

---

90 (240 - 150)

---

13. If 20 units are already on order, but not yet received, the order quantity should be (REDUCED/INCREASED) to _____ units.

REDUCED
70 (90 - 20)

---

* * * * *

Other Ordering Considerations

No business can be run by formulas alone. But formulas can be useful in guiding decisions. Before straying from them, you should be sure to have good and sufficient reason.

One common reason for straying from the ordering formulas previously described is the availability of quantity discounts and price specials. Naturally, you want to take advantage of these potential savings whenever possible. However, if quantity discounts force you to order far more than you need, the discount you earn may later be lost when you are forced to close out the merchandise at distress prices.

Maintaining Control

Systematic review of inventory purchases and production decisions is the most effective means of preventing overstocks while avoiding lost sales. The availability of accurate inventory, sales, and production records, combined with your own judgment, can guide you to sound purchasing decisions.

RECORDING INVENTORY

Purpose

Successful inventory management requires timely, accurate information for decision-making purposes. The source of this information is your inventory records. These should include accurate records of sales, production usage, and stock on hand for every item. Stock records tell you what you have. Sales and production records tell you what you need.

Inventory records are used for making the following decisions:

- Determining purchase requirements for replenishment of raw materials inventory.
- Determining production requirements for replenishment of finished goods inventory.
- Scrapping or clearing of obsolete items that are no longer needed.
- Adding new items to inventory.

Inventory Recording Systems

The best type of inventory recording system for your business will depend largely upon the number of different items you normally carry in inventory.

Manual Inventory Control Systems

As a minimum, any business should have a manual inventory control system. Manual systems generally are based upon an inventory control card similar to that shown below.

FINISHED GOODS INVENTORY CONTROL CARD

Style 72 Dress

DATE	ON HAND	IN	OUT
5/1	50		
5/2	55	10	5
5/4	70	15	
5/6	60		10
5/8	54		6
5/10	56	12	10

Stock Status Record

A separate record is maintained for each item in inventory, either raw materials or finished goods. The stock status is shown from day to day. All changes in inventory are shown as in or out.

For finished goods inventory, the "In" column would list all completed production, returns from customers, etc. The "Out" column would list all sales, scrappage, etc.

For raw materials inventory, the "In" column would list all receipts from suppliers and any material returned from production. The "Out" column would show materials used for production and scrappage.

Sales (Production) Summary

Another useful inventory record is a sales or production summary for each item in inventory. A typical sales summary is shown below.

SALES SUMMARY

Style 72 Dress

MONTH	SOLD	PRODUCED
JAN.	75	60
FEB.	85	100
MAR.	80	90
APR.	60	50
MAY	50	50
JUNE		
JULY		
AUG.		
SEPT.		
OCT.		
NOV.		
DEC.		

The sales summary can also be compared periodically with stock on hand so that items with insufficient sales activity can be cleared through promotional emphasis, price reductions, or scrapping. In this way, space and dollars invested in inventory are made available for more active and potentially more profitable items.

A monthly summary of production usage and receipts from suppliers is used for control of raw materials inventory, so that future purchases can be planned. As with the sales

325-851 O - 80 - 4

summary, raw material inventories that have shown little or no movement can be identified, so that they can be returned to suppliers, sold to other businesses, or scrapped.

Electronic Data Processing

When a large number of items is maintained in inventory, electronic data processing services are often desirable. These are available through local service bureaus. On a specified schedule, the business submits records of sales, receipts, and orders for the previous period so that the service bureau can update the inventory records. Depending upon the type of business and the programs available from the service bureau, they can provide a sales analysis for each item that can guide the business in inventory replenishment.

* * * * *

1. Examine the finished goods inventory record on page 22. Apparently, _____ style 72 dresses were sold on May 6.

10

---

2. On the morning of May 2, 50 style 72 dresses were on hand. Since 10 were produced on that date and 5 were sold, inventory increased to _____ dresses.

---

55 (50 + 10 - 5)

---

3. Refer to the sales summary on page 23. The sales summary for the style 72 dress shows that _____ were sold in January.

75

---

4. Does the sales summary show the stock on hand? (YES/NO)

NO

---

5. To determine whether or not you should make additional style 72 dresses for inventory, you would probably want to know:

   a. current stock status
   b. recent sales history
   c. both of the above

---

c. both of the above

---

6. In which of the following decisions is it necessary to have a sales history and stock status for an item in your finished goods inventory?

   a. determining production requirements
   b. evaluating a product's success
   c. evaluating the inventory level

All three answers are correct.

---

* * * * *

Periodic Inventory Changes

Inventory levels are constantly changing. As goods are purchased or produced, inventories increase. As goods are sold, inventories are reduced. To determine the inventory at the end of any period, you begin with the inventory on hand at the beginning of the period. Then, the ending inventory can be calculated as follows:

Opening Inventory
\+ Additions to Inventory during the period
\- Deductions from Inventory during the period
= Ending Inventory

For example, a furniture manufacturer has 200 folding chairs in inventory on April 1. During the month 75 folding chairs are produced and 10 are returned from customers. Total inventory additions for the month would be:

```
  75 Production
+ 10 Returns
= 85 Total Additions
```

Folding chair sales during the month are 100 and 5 must be scrapped because of warehouse handling damage. Total inventory deductions would then be as follows:

```
 100 Sales
+  5 Scrapped
= 105 Total Deductions
```

The closing inventory on April 30 would then be calculated as follows:

```
 200 Opening Inventory, April 1
+ 85 Additions to Inventory, April
- 105 Deductions from Inventory, April
= 180 Closing Inventory, April 30
```

Additions to inventory normally include the following:

Finished Goods	Raw Materials
Production	Purchases
Returns from customers	Returns from production

Deductions from inventory normally include the following:

Finished Goods	Raw Materials
Sales	Production usage
Scrappage	Returns to vendors
Pilferage	Scrappage
Inventory adjustments	Pilferage
	Inventory adjustments

* * * * *

1. Which of the following would be considered additions to finished goods inventory?

   a. goods produced
   b. sales to customers
   c. scrapping damaged goods
   d. returns from customers

---

   a. goods produced
   d. returns from customers

---

2. Which of the following would be considered deductions from raw materials inventory?

   a. purchases from suppliers
   b. production usage
   c. scrapping damaged material
   d. returns from production
   e. returns to suppliers

---

   b. production usage
   c. scrapping damaged material
   e. returns to suppliers

---

3. To calculate closing inventory, you start with the opening inventory, add _____ to inventory, and subtract _____ from inventory.

---

   additions
   deductions

---

4. A printer has 500 reams of 50# offset paper in stock at the beginning of the month. During the month 10 reams are scrapped due to water damage and 200 reams are used in production. Total deductions from inventory would be _____ reams.

---

210 (200 + 10)

---

5. During the month, 150 reams of 50# offset paper are purchased from a supplier. Calculate the closing inventory. _____

---

440 (500 + 150 - 210)

---

* * * * *

Dollar Inventory

Inventory calculations, based upon units, are useful when determining the inventory of a particular item. More often, however, you will want to know the dollar value of inventory, particularly your total inventory. Total inventory, whether finished goods, raw materials, or work-in-process, can only be evaluated in dollars since it usually includes a mix of various items such as apples and oranges, which cannot be added together.

Cash Valuation

In most businesses, inventories are valued at cost. For example, a women's clothing manufacturer makes a certain style blouse at a cost of $3.50 and sells it for $6.00. The value assigned to each blouse in inventory would be $3.50.

A producer of cleaning solvents has a $50,000 inventory of finished goods on June 1. During the month, sales are $50,000. The cost of these sales is $30,000. Production of solvents for inventory is $37,000. You would calculate the June 30 inventory as follows:

	Beginning Inventory	$50,000 (at cost)
+	Production	37,000 (at cost)
-	Sales	30,000 (at cost)
=	Ending Inventory	$57,000 (at cost)

Note that sales are recorded at cost, not actual selling prices.

* * * * *

1. In most businesses, inventories are valued at (COST/SELLING PRICE).

COST

---

2. A manufacturer of specialty lighting fixtures has a finished goods inventory of 100 fixtures. The cost of each fixture is $80. The selling price is $150. The inventory valuation would be $_____.

$8,000 (100 x $80)

---

3. At the beginning of a month, a commercial bakery has a $3,000 finished goods inventory. Sales for the month are $40,000. The cost of these sales is $20,000. During the month, goods valued at $22,000 are produced. The finished goods inventory at the end of the month is $_____.

$5,000 ($3,000 + $22,000 - $20,000)

---

4. Besides production usage, name two deductions from raw materials inventory:

   1.
   2.

Returns to suppliers
Scrapping
Pilferage
Inventory adjustments
(ANY TWO ARE CORRECT)

---

* * * * *

Work-in-Process Valuation

Work-in-process inventory does not lend itself to convenient measurement in units, as do raw materials inventory or finished goods inventory. Statements such as, "We have 50 cabinets in production right now" are usually imprecise. A more accurate statement would be, "When finished, our current production will be 50 cabinets."

Because unit measurement of work-in-process inventory is seldom significant, dollar valuation is more commonly used.

Continuous Manufacturing

In continuous manufacturing operations, work-in-process inventories can be valued on a percentage-of-completion basis. For example, take the case of a manufacturer of lighting fixtures. Each fixture has a finished cost of $10.00. Three operations are involved in the manufacture of each fixture -- cutting, assembly, and packaging. From cost studies, the manufacturer knows that, on the average, fixtures are 40% complete when in cutting, 80% complete in assembly, and 90% complete in packaging.

If there are 50 fixtures in cutting at the end of the month, 100 in assembly, and 100 in packaging, the work-in-process inventory could be valued as follows:

PRODUCTION STAGE	% COMPLETION	COST OF EACH UNIT AT THIS STAGE	NUMBER OF UNITS AT THIS STAGE	TOTAL COST OF UNITS AT THIS STAGE
Cutting	40%	$4	50	$ 200
Assembly	80	8	100	800
Packaging	90	9	100	900
		Total Cost of Work-in-Process		$1,900

The value of each stage is estimated by multiplying the percentage of completion by the finished cost. For example, fixtures in cutting are 40% complete. Therefore, the cost of each fixture at this point could be calculated as follows:

% Completion x Finished Cost = Value of Stage

0.40 x $10.00 = $4.00

The $4 cost of a fixture in cutting is then multiplied by the number of units in cutting, 50, to find the total value of units in the cutting stage, $200 (50 x $4).

This same approach is followed to evaluate fixtures in assembly and packaging. The total value of work-in-process inventory is then the sum of the values in all three stages.

Job Order Costs

Many small manufacturing and service businesses use a system of job order costs. This is particularly common in custom service and manufacturing operations where a specific job is performed for a specific customer. Typical of these businesses are construction, printing, machine shops, art services, and repairs. Each new job is assigned a job number, and a cost control card similar to the one shown below is prepared.

JOB COST CONTROL

PIONEER PLUMBING, INC.

Job No. C-205 Customer University Hospital

DATE		LABOR	MATERIAL	OVERHEAD	TOTAL
10/7	Payroll - W. Smith	$150		$200	$350
10/10	Metropolitan Supply - Pipe		$180		530
10/14	Payroll - W. Smith	120		160	810

Each item of cost is reported on the control card. Costs are classified as labor, material, and overhead. The total at any time is the total value of work-in-process inventory that the job represents. The business' total work-in-process inventory at any time is the sum of the costs on all jobs in progress.

A more detailed presentation of the development of product and service costs is given in another module. This discussion is intended only as a very brief overview to show how such costs might be determined and to distinguish the valuation techniques used for work-in-process inventory from those used for raw material and finished goods inventories.

Physical Inventory

Inventory records are posted from documents that describe sales, production, receipts, and other inventory movements. The following are typical documents:

- Customer invoices to record sales.
- Packing lists that accompany shipments to record raw material receipts from suppliers.
- Credit memos to record returns from customers.
- Credit requests to record returns to suppliers.
- Material requisitions to record transfer of materials from raw material inventory to production.

A "physical inventory" should be taken periodically to be sure that the actual quantities on hand equal those shown on inventory records. The inventory records must then be adjusted to reflect any difference between "physical inventory" and "book inventory," the quantities shown on the inventory records. The actual quantity of each item on hand must be counted and compared with that shown on the inventory record. Necessary adjustments should be made immediately.

Differences between book and physical inventory arise for many reasons. The most easily understood, of course, is pilferage. Any business naturally wants to maintain an inventory control system to detect this situation as early as possible.

Other reasons for inventory shortages are somewhat more subtle but equally damaging, if not worse. For example, if your receiving procedures are faulty, a receiving clerk may not be counting actual quantities received and comparing them with those on the vendor's packing list or invoice. If the quantity actually received is less than that invoiced to you, you are paying for the difference!

Merchandise may be sold to customers without being billed to them, through oversight or carelessness. In these cases, you will take a loss equal to your cost of the product and also lose the profit that you should have earned on the sale.

You may be accepting customer returns of merchandise that are no longer saleable because of damage, stains, or packaging defects. You may be ignoring opportunities to return merchandise to vendors when it arrives in an unfit condition for resale.

Any of these factors can result in inventory shortages. While most businesses take careful steps to guard against theft, many overlook the need for controls to guard against inventory shortages caused by faulty receiving, billing, and credit procedures.

* * * * *

1. An inventory determined by an actual count of items on hand is called a _____ inventory.

---

physical

---

2. If physical inventory differs from book inventory, records must be _____ to reconcile the difference.

---

adjusted

---

3. A physical inventory is usually taken to detect inventory _____.

---

shortages

---

4. The only cause of inventory shortages is pilferage. (TRUE/FALSE)

FALSE

---

5. The most important cause of inventory shortages is pilferage. (TRUE/FALSE)

FALSE (in most cases)

---

6. Identify three other causes of inventory shortages that are often more costly than pilferage:

1.
2.
3.

Improper receiving procedures.
Improper customer billing procedures.
Improper customer credit procedures.

---

* * * * *

PROBLEM IDENTIFICATION

Ratios of Sales to Inventory

Finished goods and work-in-process inventory quantities are often expressed in terms of an equivalent number of days', weeks', or months' sales. For example, a box manufacturer might maintain a two months' supply of fast-moving cartons in inventory. This means that there is a sufficient quantity on hand to fill expected sales in the coming two-month period. A bakery, faced with problems of spoilage and high-cost, climate-controlled storage space, would carry a much smaller inventory, perhaps just a few days' supply.

Raw materials inventories are usually expressed in terms of an equivalent number of days', weeks', or months' production usage. For example, the box manufacturer may carry a one-month supply of kraft paper in inventory. This means that the inventory of kraft paper is sufficient for one-month's production requirements. The bakery might carry a 5 days' supply of flour in inventory.

Determining your inventory levels in terms of an equivalent number of days', weeks', or months' supply permits you to:

- Compare your own inventory levels with similar businesses to detect shortages or excesses that should be corrected.

- Evaluate the inventory of individual items so that prompt action can be taken to correct shortages or excesses.

- Establish replenishment policies so that inventories can be sustained at realistic levels, minimizing the possibility of lost sales, production delays, or excessive investments.

Later, we will see how sales-inventory or production-inventory ratios can be used to accomplish the preceding objectives, but first we must consider how the ratios are calculated.

Supply Calculation

To calculate the supply of any item in inventory, you divide the inventory on hand by expected sales or usage in the coming period according to the following formula:

Inventory ÷ Average Monthly Sales = Months' Supply, or

Inventory ÷ Average Monthly Usage = Months' Supply

If you wished to evaluate your weeks' or days' supply, these expressions would be restated as follows:

Inventory ÷ Average Weekly Sales (Usage) = Weeks' Supply

Inventory ÷ Average Daily Sales (Usage) = Days' Supply

For example, a box manufacturer has 1000 cartons of one style in inventory and expects to average 500 sales per month in the coming months. The months' supply of the carton in inventory would be calculated as follows:

Inventory ÷ Average Monthly Sales = Months' Supply

1000 ÷ 500 = Months' Supply

2.0 = Months' Supply

This same calculation can be made in dollars. If the inventory valuation of the cartons, at cost, is $800 and average monthly sales (at cost) are $400, then the months' supply in dollars would be calculated as follows:

Inventory ÷ Average Monthly Sales = Months' Supply

$800 ÷ $400 = Months' Supply

2.0 = Months' Supply

Work-in-process inventories are usually measured in terms of sales, since they represent partially finished goods or services. For example, a repair shop may have a work-in-process inventory of $5,000. Average daily sales, at cost, are $1,000. The days' supply of work-in-process inventory would be calculated as follows:

Inventory ÷ Average Daily Sales = Days' Supply

$5,000 ÷ $1,000 = Days' Supply

5.0 = Days' Supply

* * * * *

1. The term "months' supply" of finished goods inventory means that the inventory is expressed in terms of an equivalent number of months' _____.

---

sales

---

2. The term "months' supply" of raw materials inventory means that the inventory is expressed in terms of an equivalent number of months' _____.

---

usage

---

3. To calculate months' supply of finished goods inventory, you would divide _____ by monthly (SALES/USAGE).

---

inventory
SALES

---

4. To calculate days' supply of raw materials inventory, you would divide _____ by _____.

---

inventory
daily sales

---

5. If inventory is valued at cost, sales must be expressed at _____ in calculating months' supply.

---

cost

---

6. A cleaning supply manufacturer has 20 barrels of a certain solvent on hand. Average weekly sales of the solvent are 5 barrels. Therefore, the inventory is equivalent to a _____ weeks' supply.

---

4 (20 ÷ 5)

---

7. The days' or months' supply of inventory can be calculated in either units or _____.

---

dollars

---

8. When calculating the supply of a group of items representing an entire inventory, you must use (UNITS/DOLLARS).

DOLLARS

---

9. Work-in-process inventories are usually expressed as an equivalent number of days', weeks', or months' (SALES/PRODUCTION USAGE).

SALES

---

10. When calculating the supply of finished goods inventory in dollars, you divide the actual inventory value by sales at (COST/SELLING PRICE).

COST

---

11. A heating contractor has a $25,000 work-in-process inventory. Average monthly sales are $12,500. The cost of these sales is $10,000. The work-in-process inventory equals _____ months' sales.

2.5 ($25,000 ÷ $10,000)

---

* * * * *

Turnover

A common measure of the effectiveness of inventory management is the annual inventory turnover rate. The annual turnover rate of finished goods and work-in-process inventory is calculated as follows:

Sales ÷ Average Inventory = Annual Turnover Rate

The annual turnover rate for raw materials inventory is calculated as follows:

Usage ÷ Average Inventory = Annual Turnover Rate

As before, you must be consistent. If you wish to measure the turnover rate in units for a particular item, you must divide sales in units by average inventory in units. If you wish to calculate turnover in dollars, both sales and inventory value must be expressed at cost.

For example, if your average finished goods inventory value is $20,000 and your annual sales are $60,000 at cost, the turnover rate would be calculated as follows:

Sales ÷ Average Inventory = Annual Turnover Rate

$60,000 ÷ $20,000 = Annual Turnover Rate

3.0 = Annual Turnover Rate

Your turnover rate tells you how many times your average inventory is sold during a year. The higher your turnover rate, the more sales volume you are producing from a given investment in inventory. For example, a turnover rate of 4 times per year would indicate twice as many sales from the same inventory investment as a turnover rate of 2.

* * * * *

1. To calculate the turnover rate of finished goods inventory, you would divide _____ by _____ .

---

sales
average inventory

---

2. For an individual item, turnover can be calculated in either units or dollars. (TRUE/FALSE)

TRUE

---

3. For an entire inventory, turnover can be calculated in either units or dollars. (TRUE/FALSE)

FALSE

---

4. Turnover for an entire inventory can only be measured in _____.

---

dollars

---

5. A pocketbook manufacturer has 2,000 pocketbooks in inventory. Annual sales are 10,000 pocketbooks. The turnover rate is _____.

5.0 (10,000 ÷ 2,000)

---

6. Your finished goods inventory is $90,000. Last year's sales were $60,000. Your cost of the merchandise sold to customers was $30,000. The turnover rate for finished goods inventory was _____.

3.0 ($90,000 ÷ $30,000)

---

7. When your average inventory value is expressed at cost, you must use sales at (COST/RETAIL) to determine the turnover rate.

COST

---

* * * * *

Comparisons of Inventory Ratios

Expressing inventory in terms of turnover rate or equivalent monthly sales or usage permits comparison of your current inventory level with any of the following:

- Industry averages.
- Inventory levels in previous periods.
- Your inventory policies.

Comparison of inventory levels in absolute dollars with similar businesses or with previous periods provides little insight. For example, if your current inventory level is $25,000 and the industry average is $45,000, this would not tell you whether your inventory was too high or too low.

It is far more useful for comparative purposes to express inventory in terms of an equivalent number of daily, weekly, or monthly sales or usage.

For example, if your finished goods inventory is equivalent to 2 months' average sales and the industry average is 1.5 months' sales, you would know that your finished goods inventory is probably higher than needed to support your sales volume. (Industry averages are available from local

offices of your industry trade association or at your public library.)

Comparison of your current inventory supply or turnover rate with your performance in previous periods will also tell you whether or not your inventory control is improving or slipping.

Many businesses establish policies for inventory levels based upon expected sales. This information is useful in controlling inventory investment and planning financial requirements.

For example, a manufacturer has a policy of maintaining a 5 weeks' supply of raw materials in inventory. If the actual inventory reached a 6 weeks' supply, then the inventories must be cleared or purchasing temporarily slowed until inventory is reduced to the 5-week level. On the other hand, if inventory declined to a 4 weeks' supply, then more materials should probably be ordered to avoid lost sales or production delays.

Individual Item Analysis

These same analysis techniques can be applied to individual items in inventory so that prompt corrective action can be taken. One common cause of apparently excessive inventories is the fact that many inventory dollars are tied up in slow-moving items which may, in fact, no longer be useful. Although the total inventory investment appears adequate or even excessive, sales are lost because capital tied up in slow-moving items is unavailable for investment in faster moving inventory that would have a far higher sales and profit potential.

These individual problems can be detected by periodic measurement of the months' supply of individual items. When an overstock has been detected, action can be taken to eliminate the overstock and use the proceeds for more profitable investment in other inventories.

For example, a toy manufacturer might have a finished goods inventory equal to 3 average months' sales. Examination of individual inventory records reveals that many items have supplies equivalent to 12 months' sales or more. Prompt action should be taken to reduce these overstocks.

* * * * *

1. A successful competitor maintains a $50,000 finished goods inventory. Your inventory is $30,000. This probably tells you:

   a. that your inventory is insufficient
   b. nothing

---

   b. nothing

---

2. A successful competitor has an annual turnover rate for finished goods of 5 times. Your turnover rate is 3 times. This tells you:

   a. that your inventory is probably excessive
   b. that your inventory is probably inadequate
   c. nothing

---

   a. that your inventory is probably excessive

---

3. In the last year, your raw materials inventory has grown from an average of $40,000 to an average of $50,000. During this period, sales and production have increased and your months' supply of raw materials inventory has remained constant at about 3.5 average monthly sales. From this, you could conclude that the effectiveness of your inventory control has:

   a. increased
   b. remained about the same
   c. declined

---

   b. remained about the same (The dollar increase in inventory value probably reflects only the increase in production requirements.)

---

4. In reducing any excess of inventories, you will probably begin by clearing:

   a. fast-moving items
   b. slow-moving items

---

   b. slow-moving items

---

5. Why is it wise to clear slow-moving items from inventory as rapidly as possible even if it is necessary to dispose of them below cost?

   To recover the dollars invested in them so that they can be used to acquire faster moving inventory.

---

6. How would you identify slow-moving items in your inventory?

   By comparing sales with inventory levels.

---

* * * * *

CORRECTIVE ACTION

Need for Immediate Action

Whenever a problem in inventory levels is discovered, immediate corrective action can minimize the consequences while preventing the problem from getting worse. The appropriate corrective action for any problem depends upon the inventory type -- raw materials, work-in-process, or finished goods -- and the nature of the problem -- an excess or a shortage.

Corrective action must be prompt. Unattended problems do not cure themselves. They become infectious. A shortage of raw material A diminishes the usefulness of raw material B. Excesses of work-in-process inventory tie up capital needed to purchase new raw materials inventories. A neglected overstock of finished goods inventory caused by a market surplus leads to further deterioration in the market price of the item.

In some cases, the need for prompt disposal is particularly acute. Seasonal items must be cleared before the season passes. The cost of storage until the next season is usually prohibitive. Prices on items with a short market life fall rapidly. Goods subject to spoilage may have no market value after just one or two days.

Excessive Finished Goods Inventory

As soon as the supply of any item in finished goods inventory appears excessive for foreseeable market requirements, the supply should be trimmed, using any of the following approaches:

- Promotion to create demand.
- Sales incentives such as extra commissions or bonuses to stimulate selling effort.
- Price reductions to retain a competitive position in a declining market.
- Disposal to discounters or other merchandisers of distress goods.
- Scrappage to free storage space.

Excessive Raw Materials Inventory

When the supply of any item in raw materials inventory appears excessive, consider the following steps:

- Return to suppliers for credit.
- Use in manufacture of other products.
- Sell, at or below wholesale prices, to competitors or other businesses in associated fields.
- Scrap to free storage space.

Excessive Work-in-Process Inventory

The cause of excessive work-in-process inventory can vary sharply from one situation to another. Whenever an excess occurs, the following corrective approaches should be considered:

- Analyze each job or product in process to determine which can be completed most quickly for transfer to finished goods inventory or sale to customers.
- Reconsider production process to reduce overall time requirement.
- Consider overtime to relieve production problems caused by lack of capacity.
- Consider subcontracting to accommodate some production requirements.
- Reexamine production process to seek ways of reducing total time requirement from beginning to end of production.
- Reevaluate production priorities to see if jobs nearer completion can be accelerated.

Inventory Shortages

Although problems associated with inventory excesses are probably more typical of small businesses, the problems of shortages cannot be ignored. Frequently, the cause of an inventory shortage of one item is simply that an excess of some other item has tied up capital and limited the business'

purchasing power for correction of the shortage. In other cases, a number of other factors must be considered.

Shortage of Finished Goods Inventory

- Accelerate production time through overtime, subcontracting, or reordering of production priorities.
- Examine possible deficiencies in raw materials inventory that are causing production delays.
- Analyze work-in-process to see if any needed finished goods are being delayed unnecessarily in production.

Shortage of Raw Materials Inventory

- Place a rush order, ignoring quantity discounts and freight costs if economically feasible.
- Consider the use of alternate suppliers.
- Purchase from a competitor or other user of the same material.
- Divert material from some other production or manufacturing process.
- Consider the use of substitute materials.

Shortage of Work-in-Process Inventory

In practice, there is almost no such thing. A "shortage" of work-in-process inventory would normally mean that business is so slow that production is unusually low. Generally, work-in-process inventories should be held to a minimum. Since they have virtually no market value, either as raw materials or finished goods, dollars committed to work-in-process inventory have little or no market value. Work-in-process is simply an essential intermediate step between raw materials and finished goods.

* * * * *

Consider the inventory problems of your own business. How would you dispose of an inventory excess? How would you correct an inventory shortage? Complete the boxes below to show how you would resolve these problems for any inventory type -- raw materials, work-in-process, or finished goods -- that is applicable to your business.

INVENTORY TYPE	HOW I WOULD CORRECT A SHORTAGE	HOW I WOULD CORRECT AN EXCESS
Raw Materials		
Work-in-Process	XXXX	
Finished Goods		

* * * * *

SUMMARY

Three Rights

The marketing success of your business depends upon your ability to provide your customer with the right goods at the right place at the right time. The right goods are those that your customer desires; the right place is in your inventory, not a supplier's warehouse; the right time is immediately.

Failure to have the right goods in the right place at the right time can often lead to lost sales and profits and, even worse, to lost customers. If they cannot purchase what they want from your business on short notice, you will lose sales and your competition will gain customers.

Capital Restriction

Maintaining an adequate inventory to meet all of your customer requirements would be easy if you had unlimited money available to buy and produce the inventory. Unfortunately, this is rarely, if ever, the case. In most small businesses, capital for inventories is limited and inventory levels must be held within these limits. Excessive inventory investments, whether in raw materials, work-in-process, or finished goods, can tie up capital that may be sorely needed for other purposes.

Therefore, the basic problem confronting small business management is to maintain inventory investments at reasonable levels while providing sufficient inventory to meet market demands.

Booklet

In this booklet, you have learned many techniques that will help you strike a satisfactory balance between the conflicting requirements of maintaining adequate inventories while restricting investment to realistic levels.

You have learned how to determine whether or not your total investment in inventory is excessive. When an excess in total inventory is identified, you can pinpoint overstocked or obsolete items that should be cleared to free dollars and space for inventory in higher demand.

You have learned how to maintain simple inventory records so that you can identify overstocked items and those that

should be purchased. To guide your inventory decisions, you can establish suitable inventory levels that should be maintained to provide a reasonable selection for customers and guard against stockouts caused by unexpected delivery delays.

You have learned how to forecast sales and production requirements so that this information can be combined with inventory records and ordering guidelines to answer the questions "What to buy?" and "How much to buy?" or, in the case of finished goods inventories, "What to produce?" and "How much to produce?"

Adapt to Your Own Business

Many of the techniques described in this booklet are general guidelines that may be adapted to the needs of your customers, your business, and your available capital. If you apply these techniques, liberally sprinkled with your own professional judgment, you will not only be able to detect problems as early as possible but you will also be able to prevent many potential problems from ever occurring.

U.S. GOVERNMENT PRINTING OFFICE : 1980 O - 325-451